**LESSON PLAN**

**CONTENT AREA:** Algebra **NAME**: Eric Hopkins

**GRADE LEVEL:** 8th -9th **TOPIC:** Quadratic Formula

**NEXT GENERATION SUNSHINE STATE STANDARDS:**

MA.912.A.7.2: Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.

Note: looked for benchmarks from earlier grades could not find any!

**UNIT:** Solving Quadratic Equations

**GOAL:** Students will conceptually understand the final method for finding roots of

quadratic equations, namely how to properly use the quadratic formula.

**OBJECTIVE:** Students will be able to derive the quadratic formula using sound logic

and reasoning and also use it to correctly solve quadratic equations.

**MATERIALS:** Interactive Whiteboard (preferred); otherwise, can use classic

whiteboard

**PROCEDURES:**

1. **Set –** “We have seen how to find roots for quadratic equations using factoring by grouping and completing the square. But what happens if those do not work?”
2. **Statement of the objective:** “Today we will discover a method that will always work, especially with imaginary numbers! It is called the quadratic formula.”
3. **Outline:**
   1. “Ok everyone, get into your pairs [main ESOL strategy]. We are going to solve three problems together using the methods we have already seen. This will help warm us up and get us thinking about solving quadratic equations.”

Ex: Solve

* 1. T: “Did anyone notice something special about the last problem? Were you able to solve it?”

S: “Yes, it is just like the first one but the signs are changed.”

S: “No, it seems impossible!”

T: “Hopefully you see that you cannot solve the last problem using any of the methods discussed so far. This is why we need the quadratic formula!”

* 1. T: “Let’s begin by deriving the formula. But I’m going to need everyone’s help! This will better help us understand the conceptual idea. We don’t just want to be able to use a formula; we want to understand it! Still in your pairs, let’s begin by completing the square for the general equation . What do you get?”

S:

T: “Ok perfect! Let’s continue…” – continue with derivation until get to final formula – . “Does this make sense to everyone? So we see that this is a general formula that comes from the method of completing the square. Does everyone see that connection?”

**EVALUATION:**

T: “Now that we know the formula, let’s try it out on the three problems we did earlier. This time, be sure to only use the quadratic formula! This will be turned in tomorrow for homework with your previous solutions.”

**Solve**

T: “One note on the last problem before you go. We have seen imaginary numbers before, right? What do we do when we get the square root of a negative? We use . So, for example, . We do the same thing when using the quadratic formula… Ok, I’ll see everyone tomorrow! Have a wonderful day!”